

EXTRACTION AND CHARACTERISATION OF
GELATINE FROM FRINGESCALE SARDINELLA
(*Sardinella fimbriata*) BONE

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Extraction and Characterisation of Gelatine from Fringescale sardinella

(*Sardinella fimbriata*) Bone

Gelatine from bone of (*Sardinella fimbriata*) was extracted and its physico-chemical properties were characterized. The gelatin was extracted at 1% of HCl for 15 hours of pre-treatment time and in hot water extraction at 67°C for 5 hours. Results demonstrated that the yield of gelatin from *S. fimbriata* was 4.57%. The results also indicated that *S. fimbriata* gelatine possessed higher percent content (68.00%) amino acid (proline and hydroxyproline) (109.22g/ml, 29.18g/ml) and gel strength (175.74-2.5) than those fish species reported in previous studies. However, it was significantly lower than bovine (125.82-27) gelatine. Scanning electron microscopy (SEM) images revealed coarse and loose structure exhibited by *S. fimbriata* gelatine while fine and compact structure exhibited by bovine. Fourier transform infrared (FTIR) spectroscopy results also elucidated changes in protein secondary structure during collagen to gelatine transformation in both *S. fimbriata* and bovine gelatines. Overall, findings from this study have suggested that *S. fimbriata* bone gelatine demonstrated similar physico-chemical properties to the bovine, therefore, it can be potentially commercialized to replace the commercial ones.

KEYWORDS: *Sardinella fimbriata*, gelatine, amino acids, physico-chemical

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ABSTRACT

Gelatine from bone of Fringescale sardinella (*Sardinella fimbriata*) was extracted and the physico-chemical properties were characterised. The gelatines were extracted at 3% of HCl for 15 hours of pre-treatment time and in hot water extraction at 67°C for 5 hours. Results demonstrated that the yield of gelatines from *S. fimbriata* was 4.57%. The results also emphasised that *S. fimbriata* gelatine possessed higher protein content (68.00 ± 7.08), imino acid (proline and hydroxyproline) (109.22g/mL, 89.18g/mL) and gel strength (178.74 ± 9.51) than those fish species reported in previous studies. However, it was significantly lower than bovine (325.62 ± 32) gelatine. Scanning electron microscopy (SEM) images revealed coarse and looser structures exhibited by *S. fimbriata* gelatine while finer and compact structures exhibited by bovine. Fourier transform infrared (FTIR) spectroscopy results also elucidated changes in protein secondary structure during collagen to gelatine transformation in both *S. fimbriata* and bovine gelatines. Overall, findings from this study have suggested that *S. fimbriata* bone gelatine demonstrated similar physico-chemical properties to the bovine, therefore, it can be potentially commercialised to replace the commercial ones.

KEYWORDS: *S. fimbriata*, fish bone gelatine, gel strength, imino acids, physico-chemical